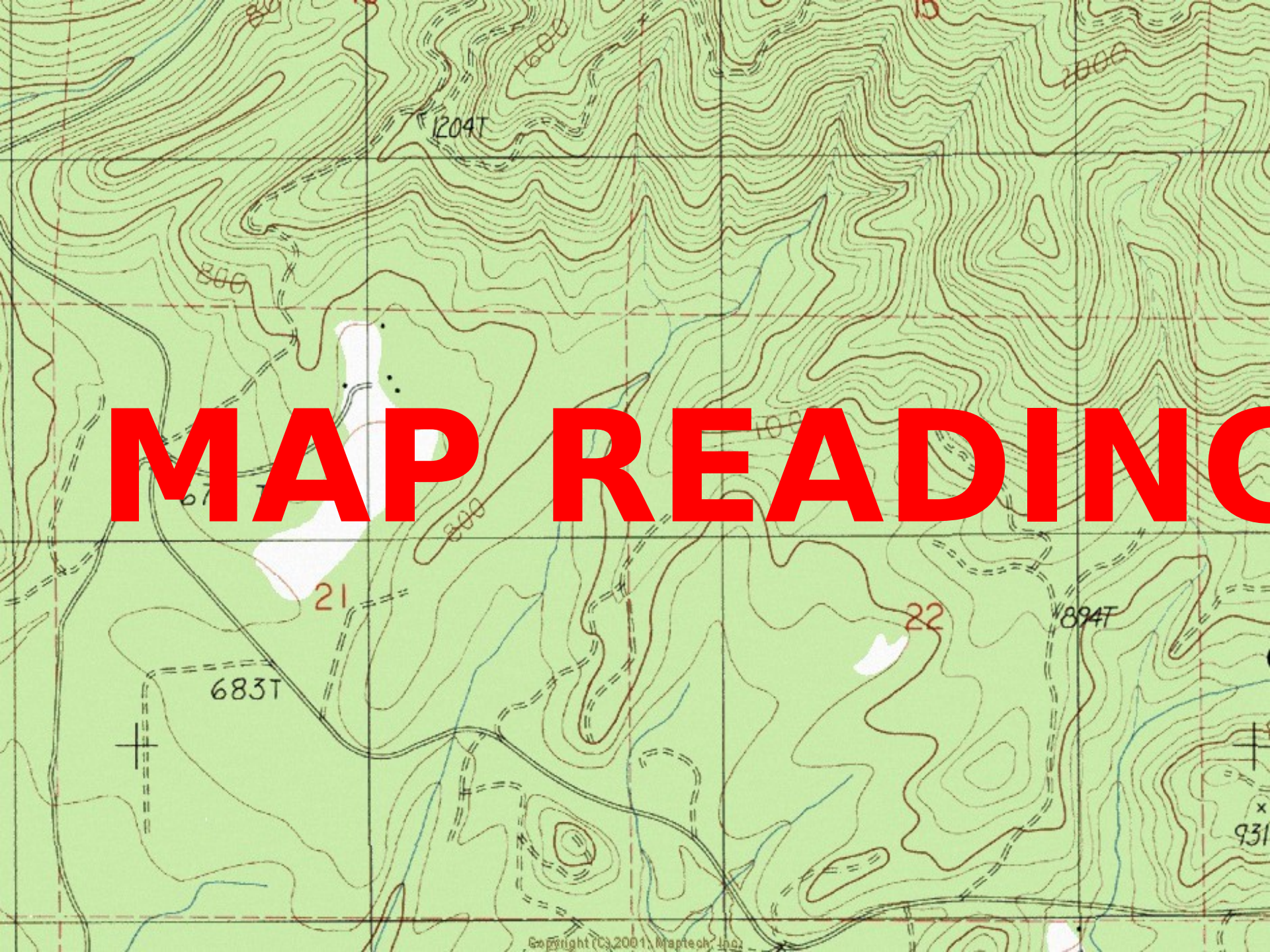
MAP READING
1204T
800
1000
2000
21
22
683T
894T
931
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ENABLING LEARNING OBJECTIVE

ACTION: LOCATE AN UNKOWN POINT ON A MAP BY RESECTION.

CONDITIONS: IN A CLASSROOM ENVIRONMENT, GIVEN A STANDARD 1:50,000 SCALE MILITARY MAP OF 'TENINO', THE LOCATION OF TWO KNOWN POINTS, A STRAIGHT EDGE, COORDINATE SCALE AND A PROTRACTOR (GTA 5-2-12), A PENCIL, AND TWO TERRAIN FEATURES VISIBLE FROM YOUR LOCATION AND IDENTIFIABLE ON THE MAP.

STANDARDS: DETERMINE THE 100,000 METER SQUARE IDENTIFICATION LETTERS AND SIX-DIGIT COORDINATES OF YOUR LOCATION TO WITHIN 100 METERS OF THE ACTUAL GRID COORDINATES.

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RESECTION

- DETERMINE THE POSITION OF AN UNKNOWN POINT BY SIGHTING ON AT LEAST TWO, BUT PREFERABLY THREE, KNOWN POSITIONS.
- DETERMINE THE AZIMUTHS FROM THE UNKNOWN POINT TO THESE POSITONS.
- PLOT THE BACK AZIMUTHS FROM THE KNOWN POSITONS TO LOCATE YOUR UNKNOWN POSITION BY THEIR INTERSECTION.

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BACK AZIMUTH

RULE #1: IF THE AZIMUTH IS MORE THAN 180 DEGREES, THEN SUBTRACT 180 DEGREES.

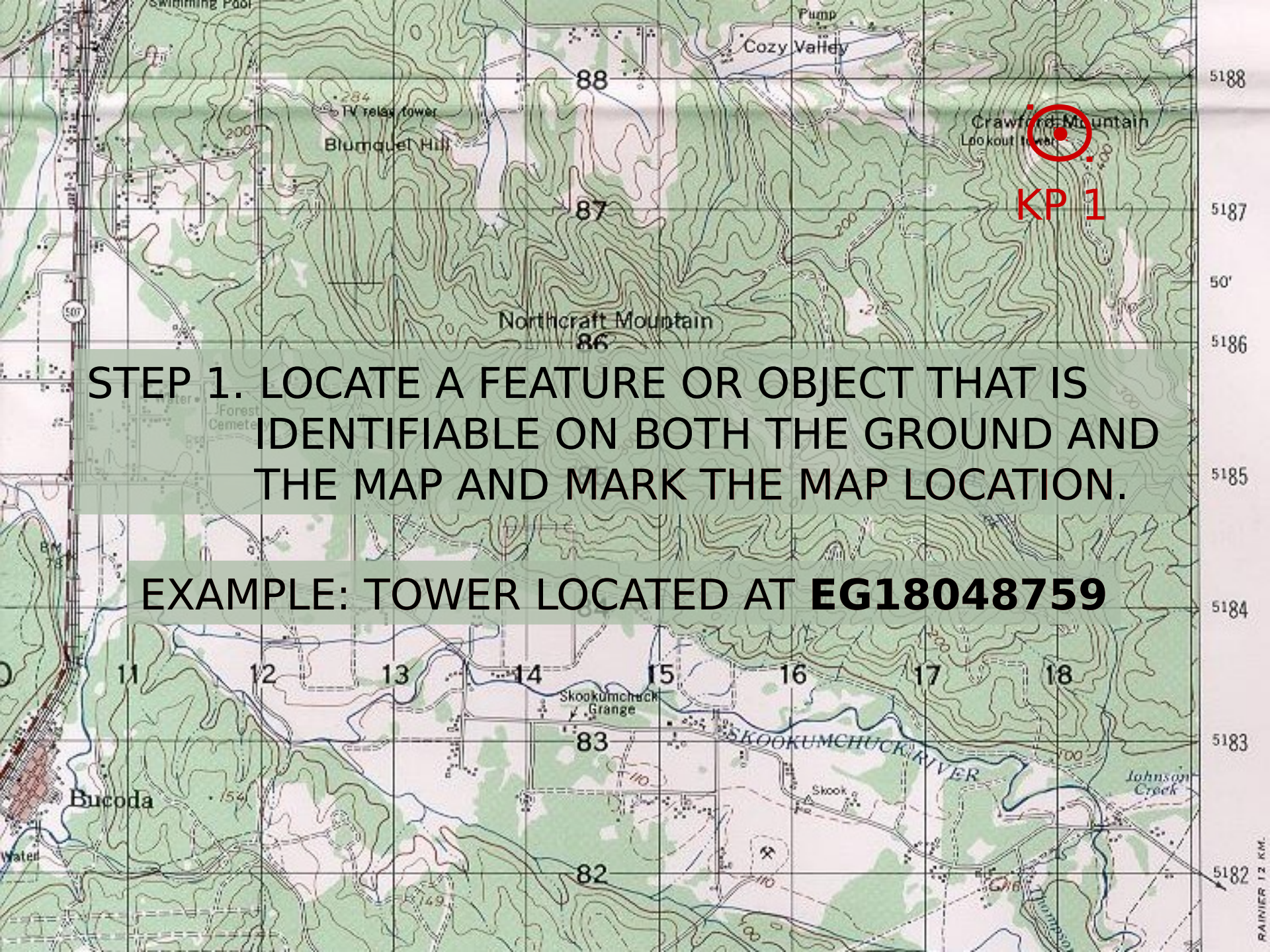
EXAMPLE: AZIMUTH 215 DEGREES
-180 DEGREES
BACK AZIMUTH 35 DEGREES

RULE #2: IF THE AZIMUTH IS 180 DEGREES OR LESS, THEN ADD 180 DEGREES.

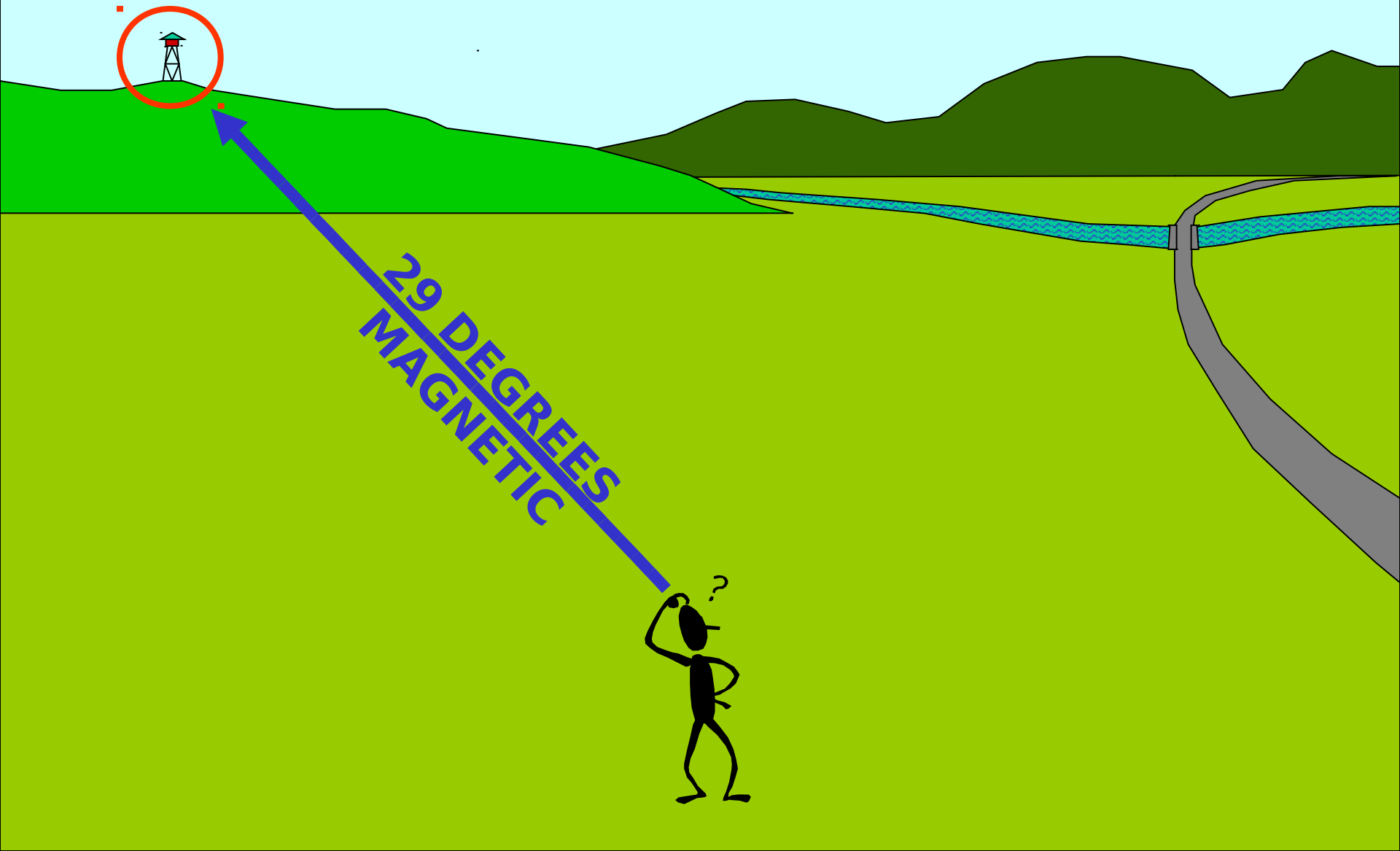
EXAMPLE: AZIMUTH 180 DEGREES
+180 DEGREES
BACK AZIMUTH 360 DEGREES

STEP 1. LOCATE A FEATURE OR OBJECT THAT IS IDENTIFIABLE ON BOTH THE GROUND AND THE MAP AND MARK THE MAP LOCATION.

EXAMPLE: TOWER LOCATED AT **EG18048759**


Swimming Pool
Pump
Cozy Valley
88
284
TV relay tower
Blumquel Hill
Crawford Mountain
Lookout tower
KP 1
87
Northcraft Mountain
86
5188
5187
50'
5186
5185
5184
5183
5182
STEP 1. LOCATE A FEATURE OR OBJECT THAT IS IDENTIFIABLE ON BOTH THE GROUND AND THE MAP AND MARK THE MAP LOCATION.
EXAMPLE: TOWER LOCATED AT **EG18048759**
11
12
13
14
15
16
17
18
Skookumchuck Grange
83
SKOOKUMCHUCK RIVER
Johnson Creek
Skook
Bucoda
154
82
149
RAINIER 12 KM.

STEP 2. MEASURE THE MAGNETIC AZIMUTH TO THE KNOWN POSITION AND CONVERT THE MAGNETIC AZIMUTH TO A GRID AZIMUTH.



STEP 2. MEASURE THE MAGNETIC AZIMUTH TO THE KNOWN POSITION AND CONVERT THE MAGNETIC AZIMUTH TO A GRID AZIMUTH.

MAGNETIC AZIMUTH: 29 DEGREES

EASTERLY G-M ANGLE: +21 DEGREES

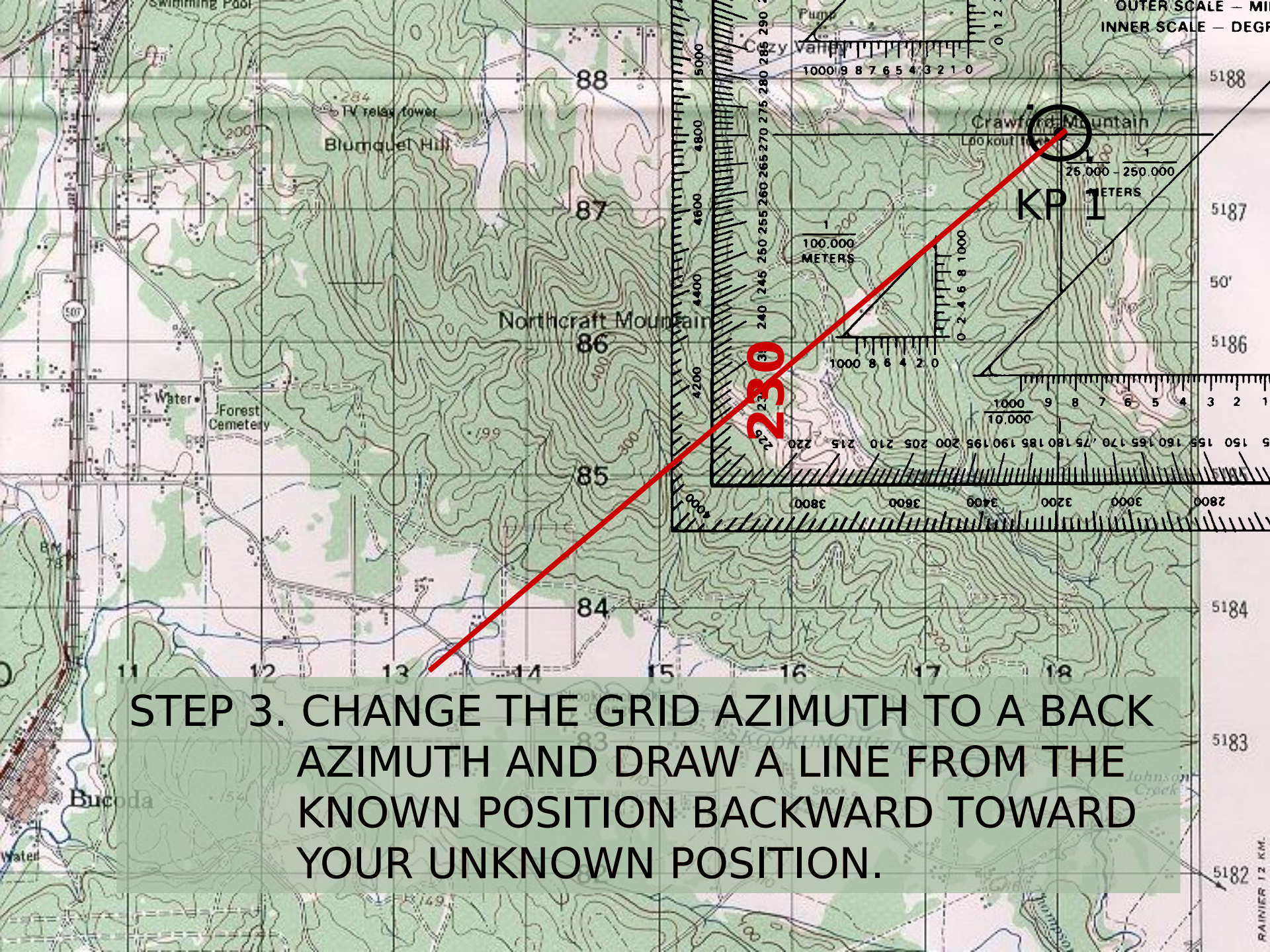
GRID AZIMUTH: 50 DEGREES

STEP 3. CHANGE THE GRID AZIMUTH TO A BACK AZIMUTH AND DRAW A LINE FROM THE KNOWN POSITION BACKWARD TOWARD YOUR UNKNOWN POSITION.

GRID AZIMUTH: 50 DEGREES

ADD: +180 DEGREES

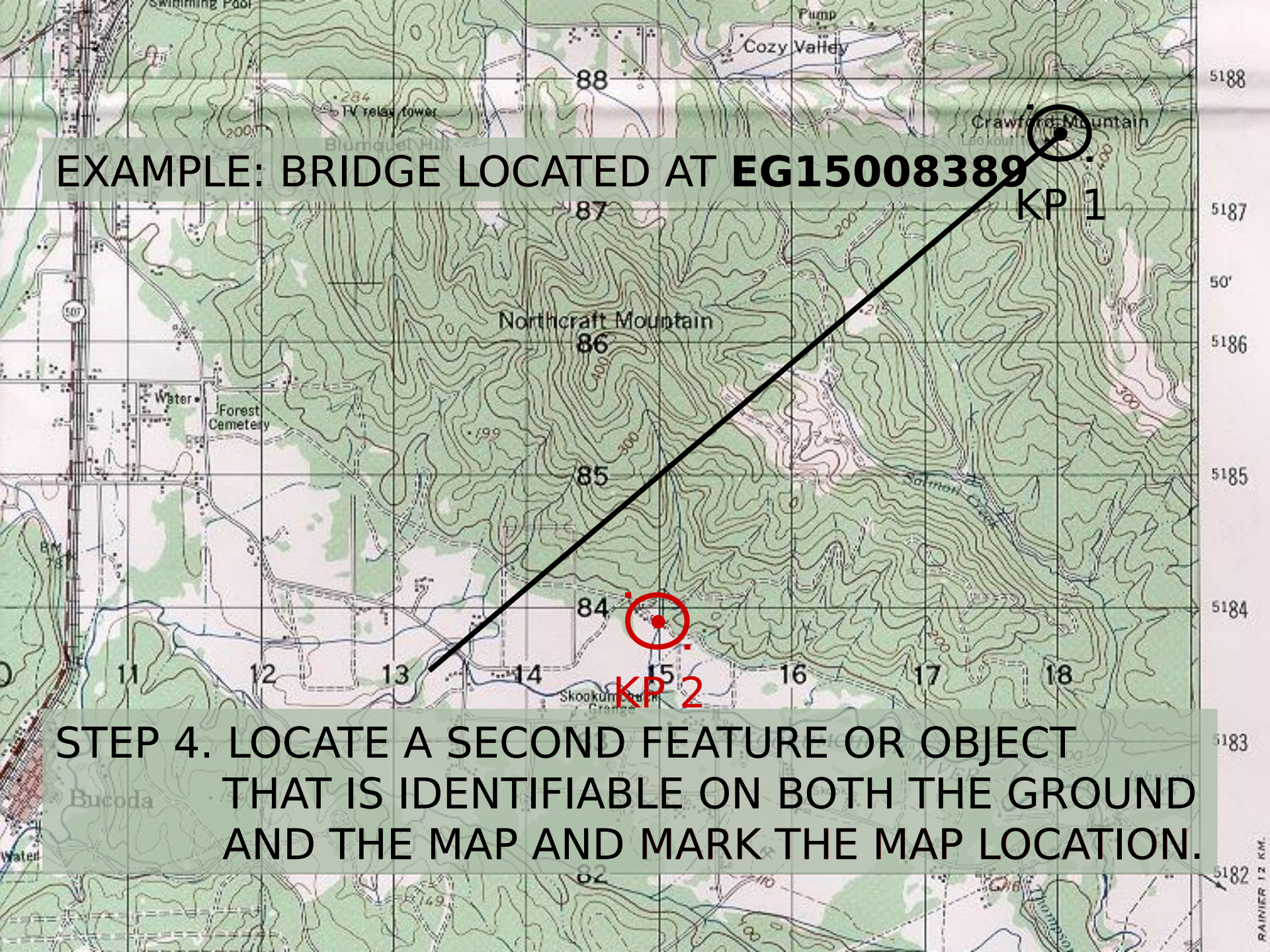
GRID BACK AZIMUTH: 230 DEGREES



STEP 3. CHANGE THE GRID AZIMUTH TO A BACK AZIMUTH AND DRAW A LINE FROM THE KNOWN POSITION BACKWARD TOWARD YOUR UNKNOWN POSITION.

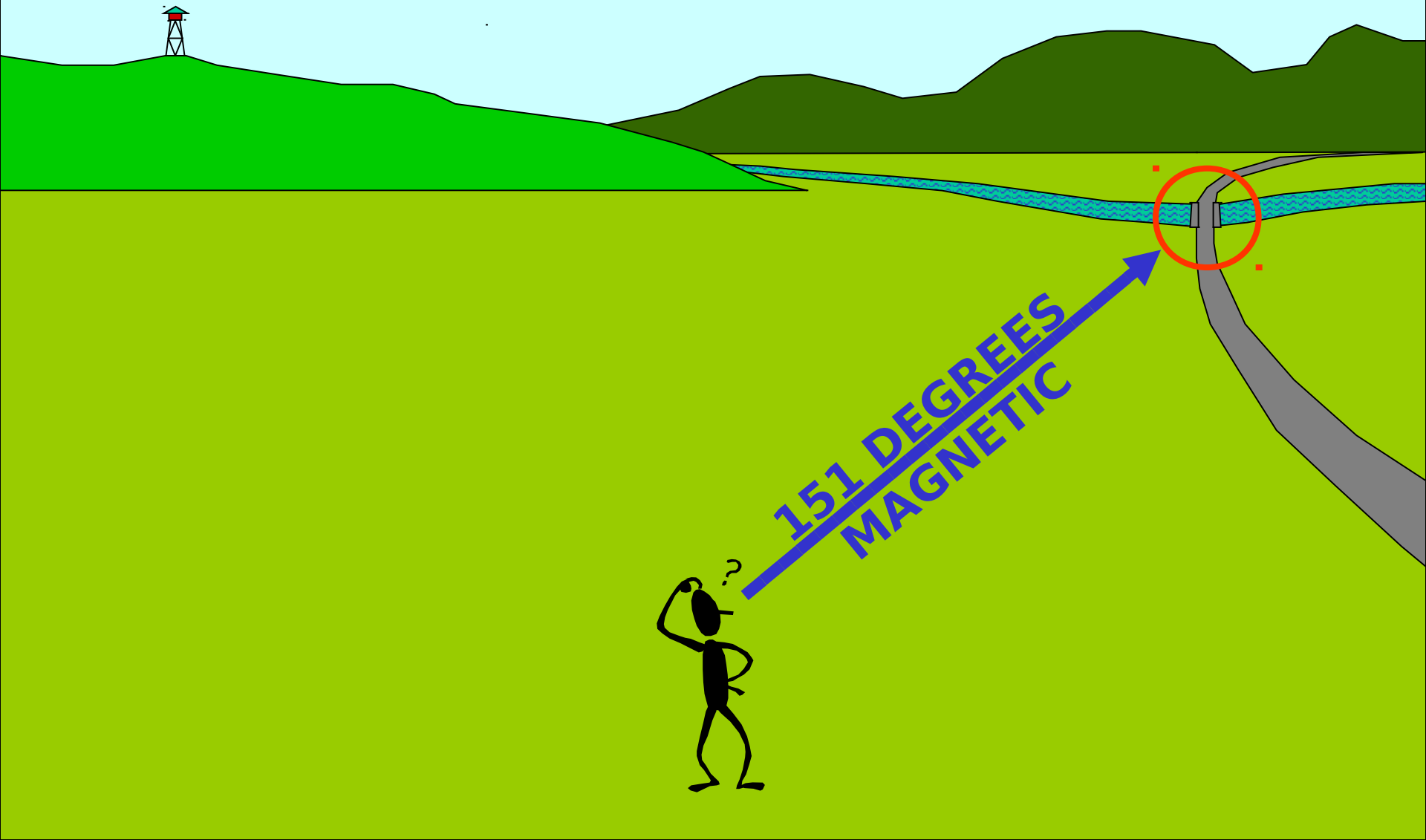
STEP 4. LOCATE A SECOND FEATURE OR OBJECT THAT IS IDENTIFIABLE ON BOTH THE GROUND AND THE MAP AND MARK THE MAP LOCATION.

EXAMPLE: BRIDGE LOCATED AT **EG15008389**



STEP 4. LOCATE A SECOND FEATURE OR OBJECT THAT IS IDENTIFIABLE ON BOTH THE GROUND AND THE MAP AND MARK THE MAP LOCATION.

STEP 5. MEASURE THE MAGNETIC AZIMUTH TO THE SECOND KNOWN POSITION AND CONVERT THE MAGNETIC AZIMUTH TO A GRID AZIMUTH.



STEP 5. MEASURE THE MAGNETIC AZIMUTH TO THE SECOND KNOWN POSITION AND CONVERT THE MAGNETIC AZIMUTH TO A GRID AZIMUTH.

MAGNETIC AZIMUTH: 151 DEGREES

EASTERLY G-M ANGLE: +21 DEGREES

GRID AZIMUTH: 172 DEGREES

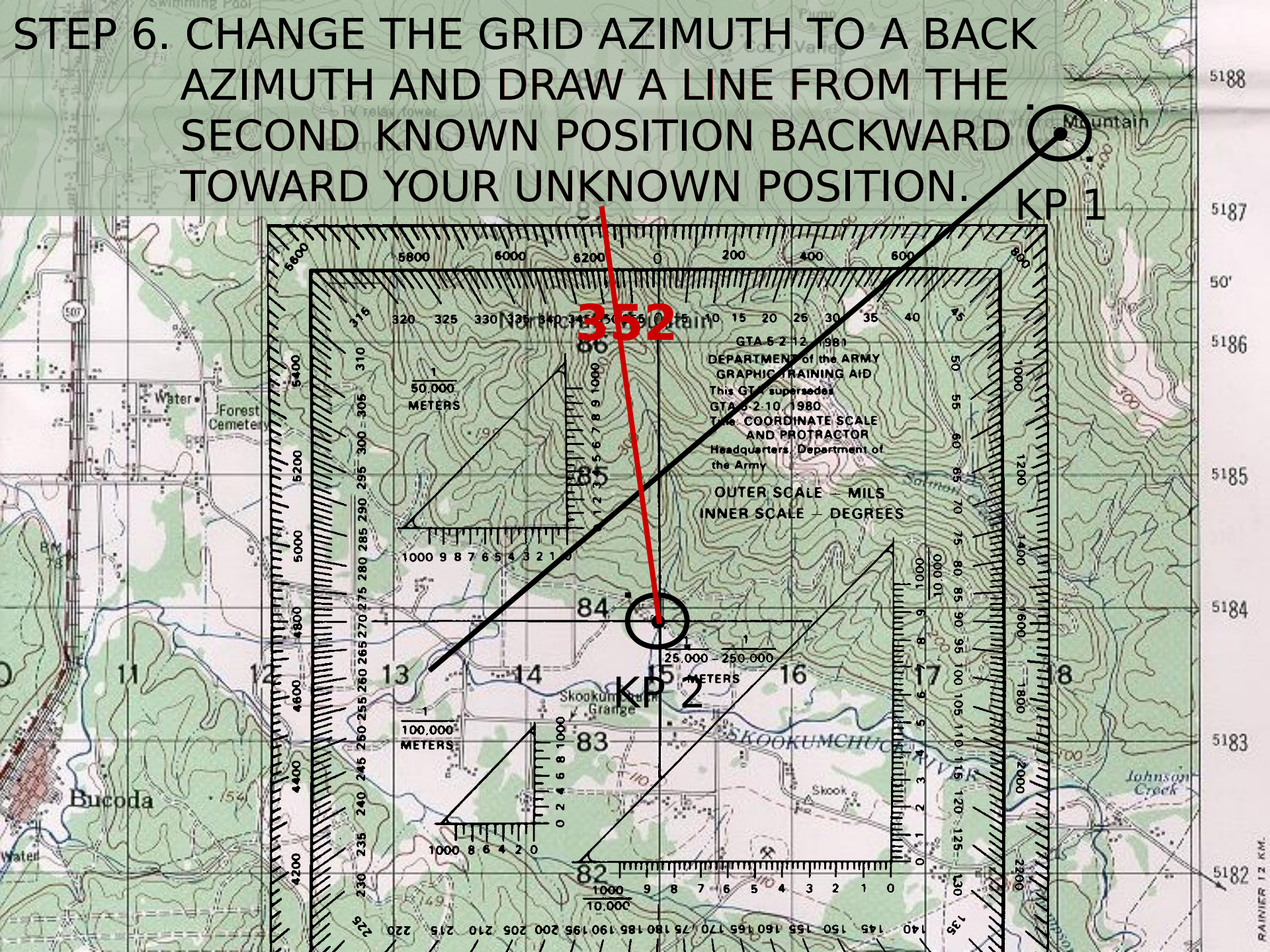
STEP 6. CHANGE THE GRID AZIMUTH TO A BACK AZIMUTH AND DRAW A LINE FROM THE SECOND KNOWN POSITION BACKWARD TOWARD YOUR UNKNOWN POSITION.

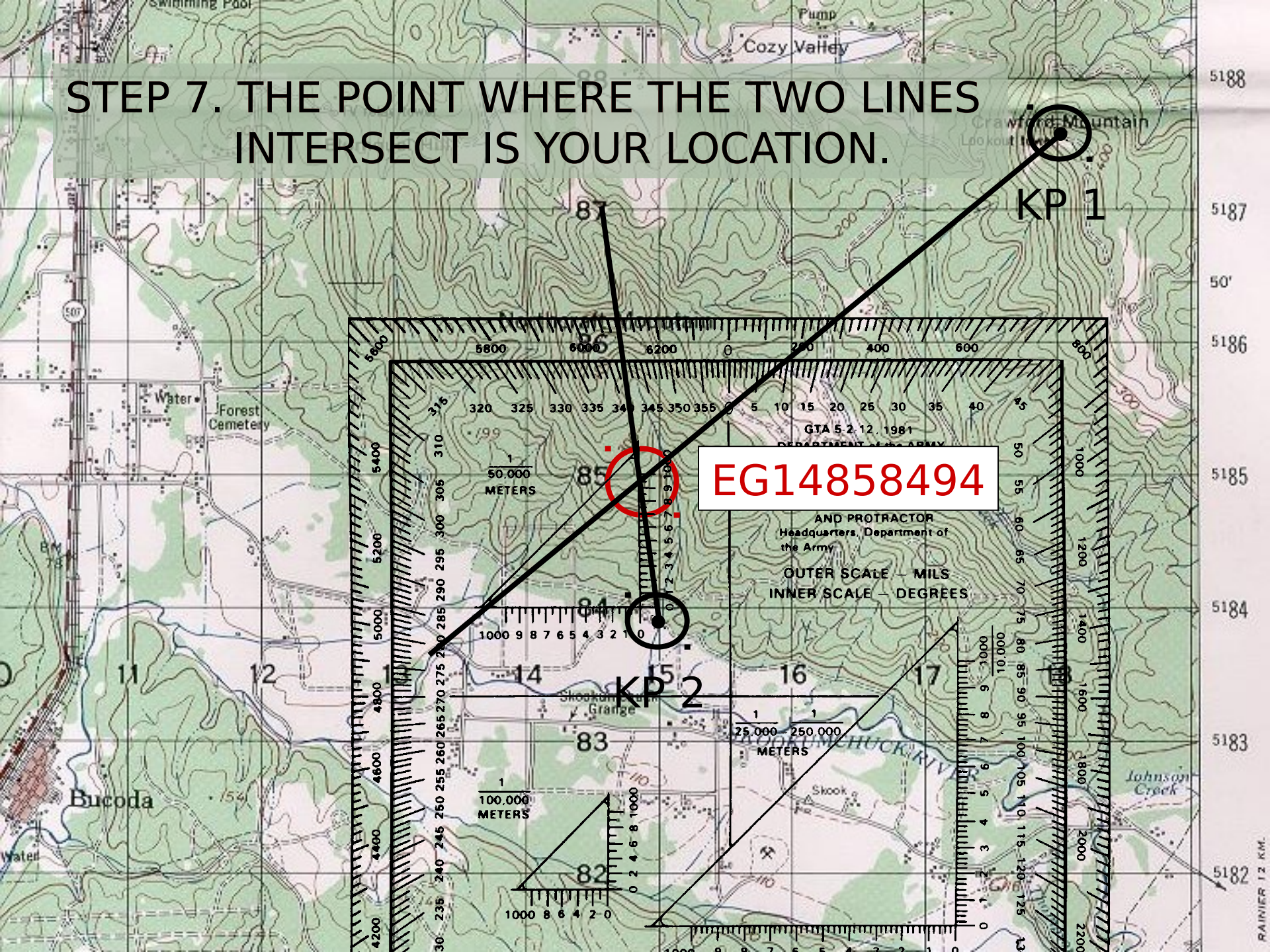
GRID AZIMUTH: 172 DEGREES

ADD: +180 DEGREES

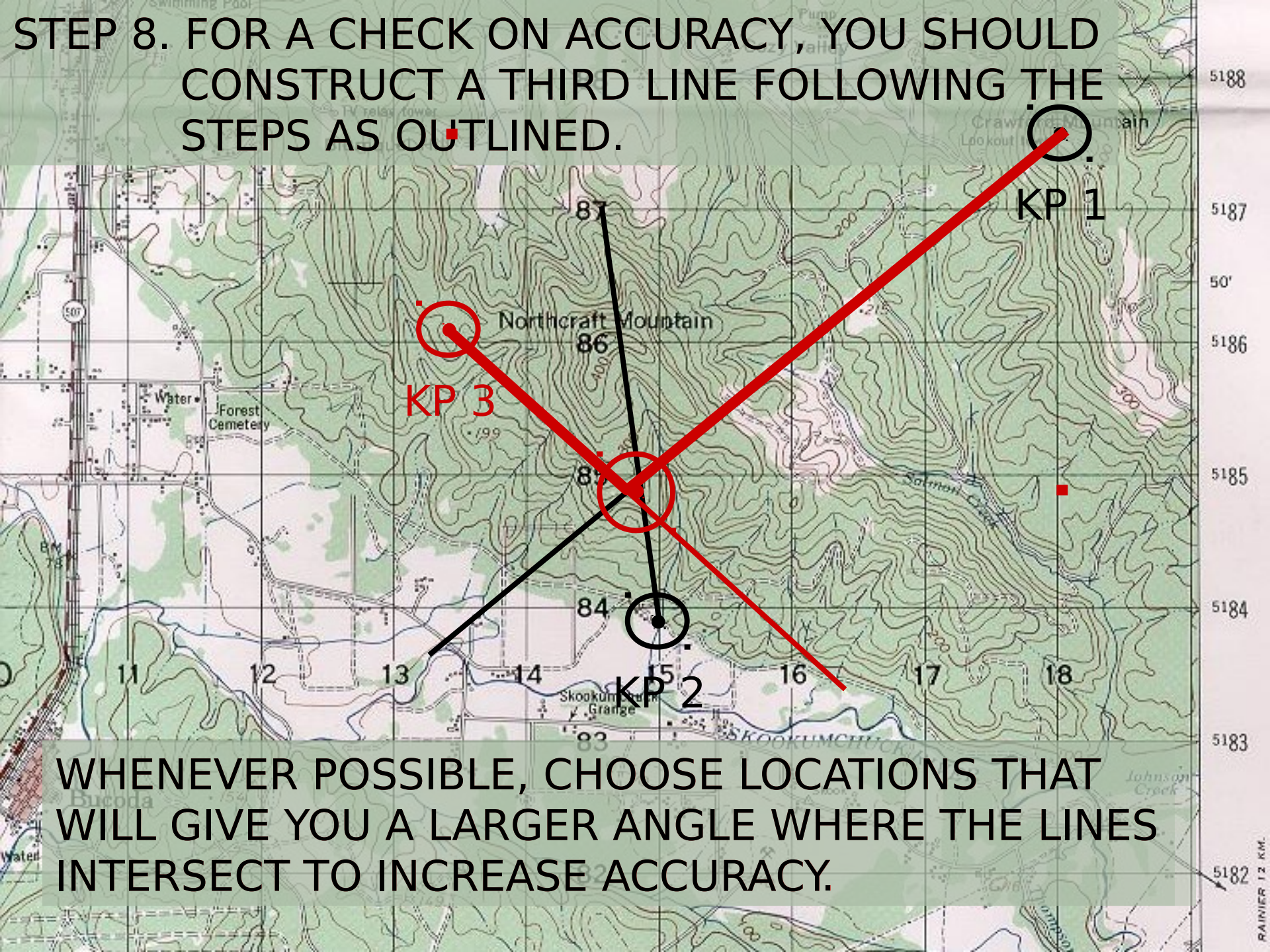
GRID BACK AZIMUTH: 352 DEGREES

STEP 6. CHANGE THE GRID AZIMUTH TO A BACK AZIMUTH AND DRAW A LINE FROM THE SECOND KNOWN POSITION BACKWARD TOWARD YOUR UNKNOWN POSITION.




STEP 7. THE POINT WHERE THE TWO LINES INTERSECT IS YOUR LOCATION.
KP 1
KP 2
EG14858494
Cozy Valley
Pump
Swimming Pool
Water
Forest Cemetery
Bucoda
Skookum Grange
Skook
Johnson Creek
AND PROTRACTOR
Headquarters, Department of the Army
OUTER SCALE – MILS
INNER SCALE – DEGREES
GTA 5-2-12, 1981
1/50,000 METERS
1/25,000 – 250,000 METERS
1/100,000 METERS
5188
5187
5186
5185
5184
5183
5182

STEP 8. FOR A CHECK ON ACCURACY, YOU SHOULD CONSTRUCT A THIRD LINE FOLLOWING THE STEPS AS OUTLINED.



WHENEVER POSSIBLE, CHOOSE LOCATIONS THAT WILL GIVE YOU A LARGER ANGLE WHERE THE LINES INTERSECT TO INCREASE ACCURACY.

PRACTICAL EXCERCISE

WHILE ON A RECONNAISSANCE MISSION, AN ENEMY SCOUT PLATOON DETECTS YOUR SQUAD. YOU TAKE UP A DEFENSIVE POSITION AND DECIDE TO REQUEST INDIRECT FIRE SUPPORT. YOU ARE NOT SURE OF YOUR LOCTION. FROM YOUR LOCATION, YOU CAN SEE A LOOKOUT TOWER IN GRID **EG1887** AT A MAGNETIC AZIMUTH OF 110 DEGREES AND A TV RELAY TOWER IN GRID **EG1287** AT A MAGNETIC AZIMUTH OF 215 DEGREES.

QUESTION: WHAT IS YOUR LOCATION?

ANSWER: EG155897

YOU DETERMINE A DISTANCE OF 800 METERS TO THE ENEMY WITH YOUR LASER RANGE FINDER AND A MAGNETIC AZIMUTH OF 290 DEGREES.

QUESTION: WHAT IS THE GRID LOCATION OF THE ENEMY SCOUT PLATOON?

ANSWER: EG149902

PRACTICAL EXERCISES

QUESTION: YOU HAVE DETERMINED THAT THE MAGNETIC AZIMUTH FROM YOUR POSITION TO THE TV RELAY TOWER IN GRID SQUARE **EG1287** IS 3 DEGREES AND THE MAGNETIC AZIMUTH TO THE SPOT ELEVATION 199 IN GRID SQUARE **EG1385** IS 77 DEGREES. WHAT IS THE SIX DIGIT GRID COORDINATE OF YOUR LOCATION?

ANSWER: EG116856

QUESTION: THE MAGNETIC AZIMUTH FROM YOUR LOCATION TO THE WATER TOWER AT **EG093853** IS 63 DEGREES AND THE MAGNETIC AZIMUTH TO THE WATER TOWER AT **EG097827** IS 104 DEGREES. WHAT IS THE SIX DIGIT COORDINATE TO YOUR LOCATION?

ANSWER: EG063849

RESECTION WITHOUT A COMPASS

STEP 1. ORIENT THE MAP TO THE GROUND.

STEP 2. LOCATE AT LEAST TWO KNOWN POSITIONS ON THE GROUND AND MARK THEM ON THE MAP.

STEP 3. LAY A STRAIGHT EDGE (I.E. PROTRACTOR) WITH ONE END AT THE FIRST KNOWN POSITION AS A PIVOT POINT, THEN ROTATE THE STRAIGHT EDGE TOWARD YOURSELF UNTIL YOU SIGHT THE KNOWN POSITION ALONG THE EDGE.

STEP 4. DRAW A LINE ALONG THE STRAIGHT EDGE.

STEP 5. REPEAT PROCEDURES 1 THRU 4 FOR THE NEXT KNOWN POSITION.

STEP 6. THE INTERSECTION OF LINES IS THE LOCATION OF YOUR POSITION.

STEP 7. AGAIN, CHECK FOR ACCURACY, YOU MAY USE A THIRD POSITION.

QUESTIONS?

TAKE
A
BREAK